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## **KEY=AER - MILES MICHAEL**

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### **HEAVY FUEL OIL (HFO)**

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#### **A REVIEW OF FATE AND BEHAVIOUR OF HFO SPILLS IN COLD SEAWATER, INCLUDING BIODEGRADATION, ENVIRONMENTAL EFFECTS AND OIL SPILL RESPONSE**

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*Nordic Council of Ministers Shipping activities across the Arctic are expected to increase with decreasing sea ice cover, thus increasing the risk of oil spills. Heavy Fuel Oil (HFO, a mixture of residual fuel and distillate diluent) is often used as fuel in marine vessels as it is relatively cheaper than e.g. lighter marine fuels. Knowledge about fate and behaviour of HFOs is important to select the most efficient countermeasures in an oil spill situation as well as in the risk assessment of possible oil spills in cold waters. The aim of this review is to collate and strengthen the knowledge base on HFO in cold seawater, its fate and behaviour, including weathering, biodegradation, environmental implications of HFO spills and HFO spill response including environmental considerations regarding use of chemical dispersants and in situ burning. Knowledge gaps and research needs are identified and described.*

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#### **ONSITE WASTEWATER TREATMENT SYSTEMS MANUAL**

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*"This manual contains overview information on treatment technologies, installation practices, and past performance."--Intro.*

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#### **DESIGN MANUAL**

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#### **ONSITE WASTEWATER TREATMENT AND DISPOSAL SYSTEMS**

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#### **PRODUCED WATER**

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#### **ENVIRONMENTAL RISKS AND ADVANCES IN MITIGATION TECHNOLOGIES**

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*Springer Science & Business Media A state-of-the-art review of scientific knowledge on the environmental risk of ocean discharge of produced water and advances in mitigation technologies. In offshore oil and gas operations, produced water (the water produced with oil or gas from a well) accounts for the largest waste stream (in terms of volume discharged). Its discharge is continuous during oil and gas production and typically increases in volume over the lifetime of an offshore production platform. Produced water discharge as waste into the ocean has become an environmental concern because of its potential contaminant content. Environmental risk assessments of ocean discharge of produced water have yielded different results. For example, several laboratory and field studies have shown that significant acute toxic effects cannot be detected beyond the "point of discharge" due to rapid dilution in the receiving waters. However, there is some preliminary evidence of chronic sub-lethal impacts in biota associated with the discharge of produced water from oil and gas fields within the North Sea. As the composition and concentration of potential produced water contaminants may vary from one geologic formation to another, this conference also highlights the results of recent studies in Atlantic Canada.*

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#### **AEROSOL SCIENCE**

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#### **TECHNOLOGY AND APPLICATIONS**

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*John Wiley & Sons Aerosols influence many areas of our daily life. They are at the core of environmental problems such as global warming, photochemical smog and poor air quality. They can also have diverse effects on human health, where exposure occurs in both outdoor and indoor environments. However, aerosols can have beneficial effects too; the delivery of drugs to the lungs, the delivery of fuels for combustion and the production of nanomaterials all rely on aerosols. Advances in particle measurement technologies have made it possible to take advantage of rapid changes in both particle size and concentration. Likewise, aerosols can now be produced in a controlled fashion. Reviewing many technological applications together with the current scientific status of aerosol modelling and measurements, this book includes:*

- Satellite aerosol remote sensing
- The effects of aerosols on climate change
- Air pollution and health
- Pharmaceutical aerosols and pulmonary drug delivery
- Bioaerosols and hospital infections
- Particle emissions from vehicles
- The safety of emerging nanomaterials
- Radioactive aerosols: tracers of atmospheric processes

*With the importance of this topic brought to the public's attention after the eruption of the Icelandic volcano Eyjafjallajökull, this book provides a timely, concise and accessible overview of the many facets of aerosol science.*

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## **MIXED-PHASE CLOUDS**

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### **OBSERVATIONS AND MODELING**

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*Elsevier Mixed-Phase Clouds: Observations and Modeling presents advanced research topics on mixed-phase clouds. As the societal impacts of extreme weather and its forecasting grow, there is a continuous need to refine atmospheric observations, techniques and numerical models. Understanding the role of clouds in the atmosphere is increasingly vital for current applications, such as prediction and prevention of aircraft icing, weather modification, and the assessment of the effects of cloud phase partition in climate models. This book provides the essential information needed to address these problems with a focus on current observations, simulations and applications. Provides in-depth knowledge and simulation of mixed-phase clouds over many regions of Earth, explaining their role in weather and climate. Features current research examples and case studies, including those on advanced research methods from authors with experience in both academia and the industry. Discusses the latest advances in this subject area, providing the reader with access to best practices for remote sensing and numerical modeling.*

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### **TRADEMARKS AND PRODUCT NAMES SECTION**

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### **NANOMEDICINE, VOLUME IIA**

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#### **BIOCOMPATIBILITY**

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*CRC Press The safety, effectiveness, and utility of medical nanorobotic devices will critically depend upon their biocompatibility with human organs, tissues, cells, and biochemical systems. In this Volume, we broaden the definition of nanomedical biocompatibility to include all of the mechanical, physiological, immunological, cytological, and biochemical re*

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#### **OIL SPILL RESPONSE GUIDE**

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*Noyes Publications Describes equipment, techniques and logistics for responding to spills. The volume is designed to serve as a guide which will help the on-scene coordinator identify the steps and priorities for responding to major oil spills, or oil well blowouts associated with petroleum activity. Annotation copyri*

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#### **EPA 630/R**

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### **TOTAL PETROLEUM HYDROCARBONS**

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#### **ENVIRONMENTAL FATE, TOXICITY, AND REMEDIATION**

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*Springer The term "total petroleum hydrocarbons" (TPHs) is used for any mixture of several hundred hydrocarbons found in crude oil, and they represent the sum of volatile petroleum hydrocarbons and extractable petroleum hydrocarbons. The petrol-range organics include hydrocarbons from C6 to C10, while diesel-range organics are C10-C28 hydrocarbons. Environmental pollution by petroleum hydrocarbons is one of the major global concerns, particularly in oil-yielding countries. In fact, there are more than five million potentially contaminated areas worldwide that represent, in general, a lost economic opportunity and a threat to the health and well-being of humans and the environment. Petroleum-contaminated sites constitute almost one-third of the total sites polluted with chemicals around the globe. The land contamination caused by industrialization was recognized as early as the 1960s, but less than a tenth of potentially contaminated lands have been remediated due to the nature of the contamination, cost, technical impracticability, and insufficient land legislation and enforcement. This book is the first single source that provides comprehensive information on the different aspects of TPHs, such as sources and range of products, methods of analysis, fate and bioavailability, ecological implications including impact on human health, potential approaches for bioremediation such as risk-based remediation, and regulatory assessment procedures for TPH-contaminated sites. As such, it is a valuable resource for researchers, graduate students, technicians in the oil industry and remediation practitioners, as well as policy makers.*

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#### **INSECTICIDES DESIGN USING ADVANCED TECHNOLOGIES**

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*Springer Science & Business Media Among the highlights of this book are the use of nanotechnology to increase potency of available insecticides, the use of genetic engineering techniques for controlling insect pests, the development of novel insecticides that bind to unique biochemical receptors, the exploration of natural products as a source for environmentally acceptable insecticides, and the use of insect genomics and cell lines for determining biological and biochemical modes of action of new insecticides.*

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#### **HANDBOOK OF PHARMACEUTICAL SALTS PROPERTIES, SELECTION, AND USE**

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*John Wiley & Sons This comprehensive up-to-date guide and information source is an instructive companion for all scientists involved in research and development of drugs and, in particular, of pharmaceutical dosage forms. The editors have taken care to address every conceivable aspect of the preparation of pharmaceutical salts and present the necessary theoretical foundations as well as a wealth of detailed practical experience in the choice of pharmaceutically active salts. Altogether, the contributions reflect the multidisciplinary nature of the science involved in selection of suitable salt forms for new drug products.*

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#### **CHEMICAL WEEK**

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#### **BUYERS' GUIDE ISSUE**

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## CONSERVATION BIOLOGY FOR ALL

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*OUP Oxford Conservation Biology for All provides cutting-edge but basic conservation science to a global readership. A series of authoritative chapters have been written by the top names in conservation biology with the principal aim of disseminating cutting-edge conservation knowledge as widely as possible. Important topics such as balancing conservation and human needs, climate change, conservation planning, designing and analyzing conservation research, ecosystem services, endangered species management, extinctions, fire, habitat loss, and invasive species are covered. Numerous textboxes describing additional relevant material or case studies are also included. The global biodiversity crisis is now unstoppable; what can be saved in the developing world will require an educated constituency in both the developing and developed world. Habitat loss is particularly acute in developing countries, which is of special concern because it tends to be these locations where the greatest species diversity and richest centres of endemism are to be found. Sadly, developing world conservation scientists have found it difficult to access an authoritative textbook, which is particularly ironic since it is these countries where the potential benefits of knowledge application are greatest. There is now an urgent need to educate the next generation of scientists in developing countries, so that they are in a better position to protect their natural resources.*

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## DESALINATION:

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### A NATIONAL PERSPECTIVE

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*National Academies Press There has been an exponential increase in desalination capacity both globally and nationally since 1960, fueled in part by growing concern for local water scarcity and made possible to a great extent by a major federal investment for desalination research and development. Traditional sources of supply are increasingly expensive, unavailable, or controversial, but desalination technology offers the potential to substantially reduce water scarcity by converting the almost inexhaustible supply of seawater and the apparently vast quantities of brackish groundwater into new sources of freshwater. Desalination assesses the state of the art in relevant desalination technologies, and factors such as cost and implementation challenges. It also describes reasonable long-term goals for advancing desalination technology, posits recommendations for action and research, estimates the funding necessary to support the proposed research agenda, and identifies appropriate roles for governmental and nongovernmental entities.*

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### PHOSPHORUS IN ENVIRONMENTAL TECHNOLOGY

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*IWA Publishing Phosphorus in Environmental Technology: Principles and Applications, provides a definitive and detailed presentation of state-of-the-art knowledge on the environmental behaviour of phosphorus and its applications to the treatment of waters and soils. Special attention is given to phosphorus removal for recovery technologies, a concept that has emerged over the past 5-6 years. The book features an all-encompassing approach: the fundamental science of phosphorus (chemistry, geochemistry, mineralogy, biology), key aspects of its environmental behaviour and mobility, industrial applications (treatment, removal, recovery) and the principles behind such applications, novel biotechnologies and, importantly, it also addresses socio-economic issues which often influence implementation and the ultimate success of any new technology. A detailed subject index helps the reader to find their way through the different scientific and technological aspects covered, making it an invaluable reference work for students, professionals and consultants dealing with phosphorus-related environmental technologies. State-of-the-art knowledge on the behaviour of phosphorus and its applications to environmental science and technology. Covers all aspects of phosphorus in the environment, engineered and biological systems; an interdisciplinary text.*

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## CHEMICAL ENGINEERING

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### CHEMISTRY AND TECHNOLOGY OF SURFACTANTS

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*John Wiley & Sons Surfactants are used throughout industry as components in a huge range of formulated products or as effect chemicals in the production or processing of other materials. A detailed understanding of the basis of their activity is required by all those who use surfactants, yet the new graduate or postgraduate chemist or chemical engineer will generally have little or no experience of how and why surfactants work. Chemistry & Technology of Surfactants is aimed at new graduate or postgraduate level chemists and chemical engineers at the beginning their industrial careers and those in later life who become involved with surfactants for the first time. The book is a straightforward and practical survey of the chemistry of surfactants and their uses, providing a basic introduction to surfactant theory, information on the various types of surfactant and some application details. This will allow readers to build onto their scientific education the concepts and principles on which the successful use of surfactants, across a wide range of industries, is based.*

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### PRETREATMENT FOR REVERSE OSMOSIS DESALINATION

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*Elsevier Pretreatment for Reverse Osmosis Desalination is a comprehensive reference on all existing and emerging seawater pretreatment technologies used for desalination. The book focuses on reverse osmosis membrane desalination, which at present is the most widely applied technology for the production of fresh drinking water from highly saline water sources (brackish water and seawater). Each chapter contains examples illustrating various pretreatment technologies and their practical implementation. Provides in-depth overview of the key theoretical concepts associated with desalination pre-treatment Gives insight into the latest trends in membrane separation technology Incorporates analytical methods and guidelines for monitoring pretreatment systems*

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### ENVIRONMENTAL ENGINEERING DICTIONARY AND DIRECTORY

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*CRC Press Like most technical disciplines, environmental science and engineering is becoming increasingly specialized. As industry professionals focus on specific environmental subjects they become less familiar with environmental problems and solutions outside their area of expertise. This situation is compounded by the fact that many environmental science related terms are confusing.*

Prefixes such as bio-, enviro-, hydra-, and hydro- are used so frequently that it is often hard to tell the words apart. The *Environmental Engineering Dictionary and Directory* gives you a complete list of brand terms, brand names, and trademarks - right at your fingertips.

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## **BIOPROCESS ENGINEERING PRINCIPLES**

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*Elsevier* The emergence and refinement of techniques in molecular biology has changed our perceptions of medicine, agriculture and environmental management. Scientific breakthroughs in gene expression, protein engineering and cell fusion are being translated by a strengthening biotechnology industry into revolutionary new products and services. Many a student has been enticed by the promise of biotechnology and the excitement of being near the cutting edge of scientific advancement. However, graduates trained in molecular biology and cell manipulation soon realise that these techniques are only part of the picture. Reaping the full benefits of biotechnology requires manufacturing capability involving the large-scale processing of biological material. Increasingly, biotechnologists are being employed by companies to work in co-operation with chemical engineers to achieve pragmatic commercial goals. For many years aspects of biochemistry and molecular genetics have been included in chemical engineering curricula, yet there has been little attempt until recently to teach aspects of engineering applicable to process design to biotechnologists. This textbook is the first to present the principles of bioprocess engineering in a way that is accessible to biological scientists. Other texts on bioprocess engineering currently available assume that the reader already has engineering training. On the other hand, chemical engineering textbooks do not consider examples from bioprocessing, and are written almost exclusively with the petroleum and chemical industries in mind. This publication explains process analysis from an engineering point of view, but refers exclusively to the treatment of biological systems. Over 170 problems and worked examples encompass a wide range of applications, including recombinant cells, plant and animal cell cultures, immobilised catalysts as well as traditional fermentation systems. \* \* First book to present the principles of bioprocess engineering in a way that is accessible to biological scientists \* Explains process analysis from an engineering point of view, but uses worked examples relating to biological systems \* Comprehensive, single-authored \* 170 problems and worked examples encompass a wide range of applications, involving recombinant plant and animal cell cultures, immobilized catalysts, and traditional fermentation systems \* 13 chapters, organized according to engineering sub-disciplines, are grouped in four sections - Introduction, Material and Energy Balances, Physical Processes, and Reactions and Reactors \* Each chapter includes a set of problems and exercises for the student, key references, and a list of suggestions for further reading \* Includes useful appendices, detailing conversion factors, physical and chemical property data, steam tables, mathematical rules, and a list of symbols used \* Suitable for course adoption - follows closely curricula used on most bioprocessing and process biotechnology courses at senior undergraduate and graduate levels.

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## **AIR EMISSIONS FROM ANIMAL FEEDING OPERATIONS**

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### **CURRENT KNOWLEDGE, FUTURE NEEDS**

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*National Academies Press* *Air Emissions from Animal Feeding Operations: Current Knowledge, Future Needs* discusses the need for the U.S. Environmental Protection Agency to implement a new method for estimating the amount of ammonia, nitrous oxide, methane, and other pollutants emitted from livestock and poultry farms, and for determining how these emissions are dispersed in the atmosphere. The committee calls for the EPA and the U.S. Department of Agriculture to establish a joint council to coordinate and oversee short - and long-term research to estimate emissions from animal feeding operations accurately and to develop mitigation strategies. Their recommendation was for the joint council to focus its efforts first on those pollutants that pose the greatest risk to the environment and public health.

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## **SOIL SURVEY LABORATORY METHODS MANUAL**

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*Scientific Publishers - USDA* The purpose of this manual is to document methodology and to serve as a reference for the laboratory analyst. The standard methods described in this SSIR No. 42, *Soil Survey Laboratory Methods Manual, Version 4.0* replaces as a methods reference all earlier versions of the SSIR No. 42 (1989, 1992, and 1996, respectively) and SSIR No. 1, *Procedures for Collecting Soil Samples and Methods of Analysis for Soil Survey* (1972, 1982, and 1984). All SSL methods are performed with methodologies appropriate for the specific purpose. The SSL SOP's are standard methods, peer-recognized methods, SSL-developed methods, and/or specified methods in soil taxonomy (Soil Survey Staff, 1999). An earlier version of this manual (1996) also served as the primary document from which a companion manual, *Soil Survey Laboratory Information Manual* (SSIR No. 45, 1995), was developed. The SSIR No. 45 describes in greater detail the application of SSL data. Trade names are used in the manual solely for the purpose of providing specific information. Mention of a trade name does not constitute a guarantee of the product by USDA nor does it imply an endorsement by USDA.

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## **HANDBOOK OF BIOCIDES AND PRESERVATIVE USE**

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*Springer Science & Business Media* My professional interest in antimicrobial agents and contamination control goes back 50 years to my tour as a microbiologist in a field hospital in Europe during World War II. With no experience and relying solely on a military handbook, I prepared thermometer trays with jars of blue bichloride of mercury and pink isopropyl alcohol. A preliminary typhoid diagnosis of one of our cooks resulted in the need for lab testing. His stool specimen and its subsequent disposal was my problem. My handbook said burn it. So burn it I did, in a five-gallon can with gasoline. Flames shot up almost six feet, and my next mistake was to extinguish them with carbon tetrachloride. This resulted in the production of lethal phosgene gas. The hospital had a near disaster. I could say that at that moment I vowed to write a how-to book so that such stupidities could be avoided. Nevertheless, when I was offered the opportunity to edit this book I thought back on the need for a real, practical treatment of my subject. This book, then, is a practical handbook for technical service personnel and scientists who are not necessarily specialists in microbiology. It provides information on suitable antimicrobial agents appropriate to their particular problem-solving needs and information on the microbial groups contributing to the specific problem, their ecologies, and strategies for controlling their access to the area or material of

interest.

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## **MEASUREMENT, ANALYSIS AND REMEDIATION OF ENVIRONMENTAL POLLUTANTS**

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Springer Nature This book discusses contamination of water, air, and soil media. The book covers health effects of such contamination and discusses remedial measures to improve the situation. Contributions by experts provide a comprehensive discussion on the latest developments in the detection and analysis of contaminants, enabling researchers to understand the evolution of these pollutants in real time and develop more accurate source apportionment of these pollutants. The contents of this book will be of interest to researchers, professionals, and policy makers alike.

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## **DESIGN OF MULTIPHASE REACTORS**

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John Wiley & Sons "This resource offers a primer on simple design methods for multiphase reactors in the chemical process industries, particularly the fine chemicals industry. It provides the process design engineer with simple yet theoretically sound procedures. Different types of multiphase reactors are dealt with on an individual basis. The book focuses on the problem of predicting mass transfer rates in these reactors. It also contains finally worked examples that clearly illustrate how a highly complex MPR like the Stirred Tank Reactor (STR) can be designed using simple correlations which need only a scientific calculator"--

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## **PHASE I UNIFORM NATIONAL DISCHARGE STANDARDS FOR VESSELS OF THE ARMED FORCES: TECHNICAL DEVELOPMENT DOCUMENT..**

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DIANE Publishing

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## **BATS IN THE ANTHROPOCENE: CONSERVATION OF BATS IN A CHANGING WORLD**

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Springer This book focuses on central themes related to the conservation of bats. It details their response to land-use change and management practices, intensified urbanization and roost disturbance and loss. Increasing interactions between humans and bats as a result of hunting, disease relationships, occupation of human dwellings, and conflict over fruit crops are explored in depth. Finally, contributors highlight the roles that taxonomy, conservation networks and conservation psychology have to play in conserving this imperilled but vital taxon. With over 1300 species, bats are the second largest order of mammals, yet as the Anthropocene dawns, bat populations around the world are in decline. Greater understanding of the anthropogenic drivers of this decline and exploration of possible mitigation measures are urgently needed if we are to retain global bat diversity in the coming decades. This book brings together teams of international experts to provide a global review of current understanding and recommend directions for future research and mitigation.

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## **TO LIFE!**

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## **ECO ART IN PURSUIT OF A SUSTAINABLE PLANET**

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Univ of California Press This title documents the burgeoning eco art movement from A to Z, presenting a panorama of artistic responses to environmental concerns, from Ant Farms anti-consumer antics in the 1970s to Marina Zurkows 2007 animation that anticipates the havoc wreaked upon the planet by global warming.

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## **LIGNOCELLULOSE-BASED BIOPRODUCTS**

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Springer This volume provides the technical information required for the production of biofuels and chemicals from lignocellulosic biomass. It starts with a brief overview of the importance, applications, and production processes of different lignocellulosic products. Further chapters review the perspectives of waste-based biofuels and biochemicals; the pretreatment of lignocellulosic biomass for biofuel production; cellulolytic enzyme systems for the hydrolysis of lignocelluloses; and basic and applied aspects of the production of bioethanol, biogas, biohydrogen, and biobutanol from lignocelluloses. This book is recommended for researchers and engineers and particularly students taking biofuel courses at graduate level.

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## **NANO AND BIO-BASED TECHNOLOGIES FOR WASTEWATER TREATMENT**

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## **PREDICTION AND CONTROL TOOLS FOR THE DISPERSION OF POLLUTANTS IN THE ENVIRONMENT**

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John Wiley & Sons Over the past few decades the boom in the industrial sector has contributed to the release in the environment of pollutants that have no regulatory status and which may have significant impact on the health of animals and humans. These pollutants also refer as "emerging pollutants" are mostly aromatic compounds which derive from excretion of pharmaceutical, industrial effluents and municipal discharge. Some form of pollutions have also evolved, including the proliferation of acid mine drainage from oxidation or weathering of obsolete and unmanaged excavations around the world; this results mostly in the dispersion of inorganic pollutants in the environment at level surpassing the treatment capacity of conventional techniques. It is recurrent these days to find water treatment plants which no longer produce water that fits the purpose of domestic consumption based on newly established guidelines. This situation has prompted water authorities and researchers to develop tools for proper prediction and control of the dispersion of pollutants in the environment to ensure that appropriate measures are taken to prevent the occurrence of outbreaks due to sudden load of these pollutants in the water system. The chapters in this book cover a wide range of nano and bio-based techniques that have been designed for the real time detection of emerging contaminants in environmental water sources, geochemical models that are continuously improved for the prediction of inorganic contaminants migration from the mine solid wastes into ground and surface waters. Remediation strategies are also discussed and include effective techniques based on nanotechnology, advanced membrane filtration, oxidative and bio- degradation processes using various types of nanocatalysts, biocatalysts or supporting polymer matrices which are under advanced investigations for their implementation at large scale for the removal of

recalcitrant pollutants from polluted water. This book is divided into two sections, the first section covers the occurrence of emerging pollutants in environmental water while the second section covers state of the art research on the removal of emerging pollutants from water using sustainable technologies. A total of 13 chapters addressing various topics related to the two sections are essentially based on recent development in the respective field which could have a significant impact on the enhancement of the performance of wastewater treatment plants around the world and especially in developing countries where access to clean and safe water remains a daily challenge

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## **DRUG DELIVERY**

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Springer Science & Business Media In the view of most experts pharmacology is on drugs, targets, and actions. In the context the drug as a rule is seen as an active pharmaceutical ingredient and not as a complex mixture of chemical entities of a well defined structure. Today, we are becoming more and more aware of the fact that delivery of the active compound to the target site is a key. The present volume gives a topical overview on various modern approaches to drug targeting covering today's options for specific carrier systems allowing successful drug treatment at various sites of the body difficult to address and allowing to increase the benefit-risk-ratio to the optimum possible.

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## **BAT EVOLUTION, ECOLOGY, AND CONSERVATION**

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Springer Science & Business Media Recent advances in the study of bats have changed the way we understand this illusive group of mammals. This volume consist of 25 chapters and 57 authors from around the globe all writing on the most recent finding on the evolution, ecology and conservation of bats. The chapters in this book are not intended to be exhaustive literature reviews, but instead extended manuscripts that bring new and fresh perspectives. Many chapters consist of previously unpublished data and are repetitive of new insights and understanding in bat evolution, ecology and conservation. All chapters were peer-reviewed and revised by the authors. Many of the chapters are multi-authored to provide comprehensive and authoritative coverage of the topics.

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## **ECOLOGY AND CLASSIFICATION OF NORTH AMERICAN FRESHWATER INVERTEBRATES**

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Academic Press The third edition of Ecology and Classification of North American Freshwater Invertebrates continues the tradition of in-depth coverage of the biology, ecology, phylogeny, and identification of freshwater invertebrates from the USA and Canada. This text serves as an authoritative single source for a broad coverage of the anatomy, physiology, ecology, and phylogeny of all major groups of invertebrates in inland waters of North America, north of Mexico.

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## **PRINCIPLES OF CORROSION ENGINEERING AND CORROSION CONTROL**

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Elsevier Corrosion is a huge issue for materials, mechanical, civil and petrochemical engineers. With comprehensive coverage of the principles of corrosion engineering, this book is a one-stop text and reference for students and practicing corrosion engineers. Highly illustrated, with worked examples and definitions, it covers basic corrosion principles, and more advanced information for postgraduate students and professionals. Basic principles of electrochemistry and chemical thermodynamics are incorporated to make the book accessible for students and engineers who do not have prior knowledge of this area. Each form of corrosion covered in the book has a definition, description, mechanism, examples and preventative methods. Case histories of failure are cited for each form. End of chapter questions are accompanied by an online solutions manual. \* Comprehensively covers the principles of corrosion engineering, methods of corrosion protection and corrosion processes and control in selected engineering environments \* Structured for corrosion science and engineering classes at senior undergraduate and graduate level, and is an ideal reference that readers will want to use in their professional work \* Worked examples, extensive end of chapter exercises and accompanying online solutions and written by an expert from a key petrochemical university

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## **ENVIRONMENTAL AND HUMAN SAFETY OF MAJOR SURFACTANTS**

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### **ALCOHOL ETHOXYLATES AND ALKYLPHENOL ETHOXYLATES**

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CRC Press The book summarizes and reviews the environmental and human safety of two classes of nonionic surfactants-alcohol ethoxylates (AE) and alkylphenol ethoxylates (APE). This unique resource contains critical data from published sources as well as from unpublished studies submitted by Soap and Detergent Association member companies. It reviews information on product chemistry and analysis, biodegradation, environmental levels (including fate and distribution), aquatic toxicity, and human safety. Recently developed analytical techniques for the extraction, separation, detection, and measurement of nonionic surfactants and their metabolites in environmental samples are described. Results of biodegradation studies performed with a variety of test systems are tabulated, as are results of field studies at wastewater treatment plants. Reported comparisons of environmental levels with results of acute and chronic aquatic toxicity tests are provided. The information on the toxicity and irritation potential of AE and APE surfactants includes data from in vitro, mammalian, and human studies.

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## **MICROORGANISMS IN ENVIRONMENTAL MANAGEMENT**

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### **MICROBES AND ENVIRONMENT**

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Springer Science & Business Media Microbes and their biosynthetic capabilities have been invaluable in finding solutions for several intractable problems mankind has encountered in maintaining the quality of the environment. They have, for example, been used to positive effect in human and animal health, genetic engineering, environmental protection, and municipal and industrial waste treatment. Microorganisms have enabled feasible and cost-effective responses which would have been impossible via straightforward chemical or physical engineering methods. Microbial technologies have of late been applied to a range of environmental problems, with considerable success. This survey of recent scientific progress in usefully applying microbes to both environmental management

and biotechnology is informed by acknowledgement of the polluting effects on the world around us of soil erosion, the unwanted migration of sediments, chemical fertilizers and pesticides, and the improper treatment of human and animal wastes. These harmful phenomena have resulted in serious environmental and social problems around the world, problems which require us to look for solutions elsewhere than in established physical and chemical technologies. Often the answer lies in hybrid applications in which microbial methods are combined with physical and chemical ones. When we remember that these highly effective microorganisms, cultured for a variety of applications, are but a tiny fraction of those to be found in the world around us, we realize the vastness of the untapped and beneficial potential of microorganisms. At present, comprehending the diversity of hitherto uncultured microbes involves the application of metagenomics, with several novel microbial species having been discovered using culture-independent approaches. Edited by recognized leaders in the field, this penetrating assessment of our progress to date in deploying microorganisms to the advantage of environmental management and biotechnology will be widely welcomed.

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## **INTERNATIONAL ENERGY OUTLOOK**

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### **WATER AND ENERGY**

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#### **THREATS AND OPPORTUNITIES**

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*IWA Publishing Rapid and important developments in the area of energy - water nexus over the last two to three years have been significant. This new edition of Water and Energy: Threats and Opportunities is timely and continues to highlight the inextricable link between water and energy, providing an up-to-date overview of the subject with helpful detailed summaries of the technical literature. Water and Energy has been up-dated throughout and major changes are: new chapters on global warming and fossil fuels, including shale gas and fracking; the consequences of the Deepwater Horizon accident in the Mexican Gulf and the Niger Delta oil spills; new developments in hydropower; and continued competition between food, water and energy. Water and Energy Threats and Opportunities, 2e creates an awareness of the important couplings between water and energy. It shows how energy is used in all the various water cycle operations and demonstrates how water is used and misused in all kinds of energy production and generation. Population increase, climate change and an increasing competition between food and fuel production create enormous pressures on both water and energy availability. Since there is no replacement for water, water security looks more crucial than energy security. This is true not only in developing countries but also in the most advanced countries. For example, the western parts of the USA suffer from water scarcity that provides a real security threat. Part One of the book describes the water-energy nexus, the conflicts and competitions and the couplings between water security, energy security, and food security. Part Two captures how climate change, population increase and the growing food demand will have major impact on water availability in many countries in the world. Part Three describes water for energy and how energy production and conversion depend on water availability. As a consequence, all planning has to take both water and energy into consideration. The environmental (including water) consequences of oil and coal exploration and refining are huge, in North America as well as in the rest of the world. Furthermore, oil leak accidents have hit America, Africa, Europe as well as Asia. The consequences of hydropower are discussed and the competition between hydropower generation, flood control and water storage is illustrated. The importance of water for cooling thermal power plants is described, as this was so tragically demonstrated at the Fukushima nuclear plants in 2011. Climate change will further emphasize the strong coupling between water availability and the operation of power plants. Part Four analyses energy for water - how water production and treatment depend on energy. The book shows that a lot can be done to improve equipment, develop processes and apply advanced monitoring and control to save energy for water operations. Significant amounts of energy can be saved by better pumping, the reduction of leakages, controlled aeration in biological wastewater treatment, more efficient biogas production, and by improved desalination processes. There are 3 PowerPoint presentations available for Water and Energy - threats and opportunities, 2e. About the author Gustaf Olsson, Professor Em. in Industrial Automation, Lund University, Sweden Since 2006, Gustaf has been Professor Emeritus at Lund University, Sweden. Gustaf has devoted his research to control and automation in water systems, electrical power systems and process industries. From 2006 to 2008 he was part time professor in electrical power systems at Chalmers University of Technology, Sweden. He is guest professor at the Technical University of Malaysia (UTM) and at the Tsinghua University in Beijing, China and he is an honorary faculty member of the Exeter University in UK. Between 2005 and 2010 he was the editor-in-chief of the journals Water Science and Technology and Water Science and Technology/Water Supply, (IWA Publishing). From 2007 to 2010, he was a member of the IWA Board of Directors and in 2010 he received the IWA Publication Award. In 2012 he was the awardee of an Honorary Doctor degree at UTM and an Honorary Membership of IWA. Gustaf has guided 23 PhDs and a few hundred MSc students through their exams and has received the Lund University pedagogical award for distinguished achievements in the education". The Lund University engineering students elected him as the teacher of the year He has spent extended periods as a guest professor and visiting researcher at universities and companies in the USA, Australia and Japan and has been invited as a guest lecturer in 19 countries outside Sweden. He has authored nine books published in English, Russian, German and Chinese and and contributed with chapters in another 19 books as well as more than 170 scientific publications.*